PRAIRIE FALCON (*Falco mexicanus*)

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Criteria Scores

Population Trend	Range Trend	Population Size	Range Size	Endemism	Population Concentration	Threats
10	5	10	0	0	0	10

Special Concern Priority

California: Currently ranked as a Bird Species of Special Concern, Priority 3. Considered a Bird Species of Special Concern (Remsen 1978), Bird Species of Special Concern list update (Anonymous 1992), and on the list of Special Animals (CDFG 2001).

Federal: None

Other: Partners in Flight (PIF) priority IIc. (Moderate priority [Wintering population - west coast, Sierra Nevada, and Sonora and Mojave desert physiographic regions; Breeding population - west coast and Sierra Nevada physiographic regions]) and I (Low priority [Wintering and breeding populations in the Great Basin physiographic region]). National Audubon Society, Watch List.

Breeding Bird Survey Statistics for California

Breeding Bird Survey data inadequate for trend assessment (Sauer et al. 2000). Detected during BBS surveys along 47 routes between 1966 and 1996 in the northeast, high desert (Inyo and Mono counties), Mojave desert region, central and south coast ranges, and northern and southern Central Valleys. Christmas Bird Count (CBC) data trend analyses for the period 1959 – 1988 (Trend 2.4, n=116, p<0.01) indicate a statistically significant increasing trend for this species in California (Sauer et al 1996).

General Range and Abundance

Occurs as a breeder throughout the western United States north into southern Canada (Alberta, Saskatchewan), south to northern and central interior Mexico and northern Baja California, and

west to west coast of the coastal range in California, Oregon and Washington (Steenhof 1998). Lanning and Hitchcock (1991) confirmed the central Mexico breeding distribution but acknowledged their nest search was limited to mountainous areas in north-central Mexico and that additional research was needed to investigate breeding in southern Mexico. Winters in central U.S. (North and South Dakota, Nebraska, Kansas, Oklahoma, and eastern Texas), central interior Mexico, southern Baja California, the pacific northwest, and northern Rocky Mountains (Steenhof 1998).

Population estimates range from 5,000-6,000 pairs in 1979, based on interviews with biologists from 17 U.S. states, 3 Canadian provinces, and Mexico, to 13,000 (6,500 pairs) based on individuals observed during Christmas Bird Counts during the early 1980's (Steenhof 1998).

No recognized subspecies.

Seasonal Status in California

Year-round resident throughout most of California except northern and central coast, southern California coastal plains, central Sierra Nevada, and southern Sacramento Valley (Yuba, Sacramento, Solano, El Dorado counties) (Unpubl. County Bird List data, Unpubl. Data; San Luis Obispo, Orange, Los Angeles, and San Diego County Breeding Bird Atlas projects). Winters throughout California except in alpine and subalpine areas of Sierra Nevada (Unpubl. County Bird List data) and likely absent from highest elevations of Cascades, Warner Mountains and Trinity Alps.

Not a true migrant in the sense of regular and predictable north and south seasonal movements and probably opportunistically follows prey populations (Steenhof 1998). Year-round status in essentially the entire south state (except Orange County), the Sacramento valley, and northwestern California (Unpubl. County Bird List Data). Winter resident population probably bolstered by influx of local and regional migrants (pers. obs.) especially in the central valley where prey species utilizing agricultural lands may result in highly available prey (Steenhof 1998).

Historical Range and Abundance in California

Historic California range described as the entire state except the pacific northwest (Grinnell and Miller 1944). Northern and western breeding limits described as northern Siskiyou County (exceptional record) west to Alameda and Contra Costa counties (Grinnell and Miller 1944). Occurred throughout above described range, including both Farallon islands and San Miguel island, and observed at 14,000+ feet above MSL in Inyo County (Grinnell and Miller 1944).

Grinnell and Miller (1944) considered this species "common" in "metropolis" of range described as the southeastern deserts northwest through the inner coast ranges. No historic population size or abundance information available prior to 1950 (Steenhof 1998).

Recent Range and Abundance in California

The following description of the Prairie Falcon range in California is based on published accounts and studies and sighting information from the BBS, CBC, Breeding Bird Atlas efforts, and county bird lists.

Summer: Occupies desert (desert scrub, alkali desert scrub, desert wash), mixed shrub and xeric shrub land (low sage, bitterbrush, sagebrush, and mixed chaparral), and annual and perennial grassland habitats of the eastern high desert, Mojave and Sonoran desert, and northeast great basin regions (Shuford and Metropulos 1996, Unpubl. County Bird List Data, Breeding Bird Survey data, Boyce et al 1986, Boyce 1987, Unpubl. Dept. of Fish and Game Data). Occupies a variety of open and sparse shrub and woodland habitats (mixed chaparral, coastal scrub, coastal oak woodland, blue oak woodland, annual and perennial grassland) in the inner and outer coast ranges of central and southern California, the eastern and western slope of the Sierra Nevada, and the western slope of the southern Cascade mountains (Unpubl. County Bird List Data, Breeding Bird Survey data, Boyce et al 1986, Unpubl. Dept. of Fish and Game Data, Alameda, San Diego, San Luis Obispo, Los Angeles, and Orange county Breeding Bird Atlas data.)

Winter: Winters throughout the state in a variety of open and sparse grassland, shrub land, and woodland habitats except in conifer woodlands and alpine habitats in the Sierra Nevada, Cascades, Trinity mountains, and outer coast range of north-central California (Unpubl. Christmas Bird Count data, Boyce et al 1986, Unpubl. Dept. of Fish and Game Data).

Boyce et al (1986) attempted to census the breeding California Prairie Falcon population between 1970 and 1979 documenting 520 nesting territories distributed in every biotic province (Dice 1943) in California with the majority occurring in the Californian province (332, 64%). This Province comprises the central coast, Central Valley, high deserts of Inyo County, the north and south coast and cascade region, and Sierra Nevada. Although the biotic province physiographic strata have been largely replaced in current use by the USDA Ecoregion strata (Miles and Goudy 1997), the Prairie Falcon still occurs in as a year round resident or wintering bird in every USDA Ecoregion Section.

While there are no data directly supporting assertions of California breeding population declines, indirect evidence suggests regional and local declines. Grinnell and Miller (1944) described this species as "common" in the Mojave and Sonoran deserts and northeastern California. County Bird Lists, which offer a reliable qualitative assessment of abundance on a county scale, indicate "uncommon" or "rare" ratings in 6 of 10 counties with significant land area in the desert and northeastern California regions with Prairie Falcons still considered "common" or "abundant" in this region in only Modoc, Inyo, and San Bernardino counties. Similarly, the Prairie Falcon is considered "rare" in most central valley counties including Tehama, Glenn, Colusa, Yuba, Yolo, Sacramento, Salono, Merced, and Kings and "uncommon" in the remaining central valley counties. The species apparently no longer breeds along the central and northern California coast from Santa Cruz county north, although it probably was never common as a breeder in this region (Boyce et al 1986, Steenhof 1998). Also apparently recently extirpated as a breeder from Sacramento, El

Dorado, and Solano counties (Unpubl. Christmas Bird Count data, Unpubl. Dept. of Fish and Game Data).

The California population was estimated in 1977 at 300-500 pairs (Boyce et al 1986) or between 6% and 10% of the range-wide population. Populations appear to be stable or increasing in most western states (Steenhof 1998). Butcher et al (1987, cited in Steenhof 1998) compared number of individuals counted in all North American Christmas Bird Count circles during 1969-1971 to those counted during 1980-1983 for 7 raptor species and noted a 145% increase for Prairie Falcons. The only recent data for California (ie, BBS, CBC, County bird lists) suggest declines in Central Valley and southern coastal areas, but these data are not comprehensive and should be considered with caution.

Ecological Requirements

Prairie Falcons nest primarily on shelves and outcroppings of cliffs occasionally using old corvid or raptor nests for breeding and often sharing nest cliffs with Common Ravens (*Corvus corax*), Golden Eagles (*Aquila chrysaetos*), and Red-tailed Hawks (*Buteo jamaicensis*) (LaPrie 1997, Steenhof 1998). Nest sites are usually associated with grassland, desert scrub, sparse chaparral, or sparse juniper and oak woodland habitats (LaPrie 1997).

Primary prey in most areas is ground squirrels (*Spermophilus sp.*) and also includes various medium-size birds and reptiles (Steenhof 1998). Based on identification of prey species at 19 nest sites in the Mojave Desert, Boyce (1985) noted prey frequencies of 52% mammals (9 species), 38% birds (25 species) and 10% reptiles (5 species). Remains of Horned Lark (*Eremophila alpestris*), Valley Pocket Gopher (*Thomomys bottae*) and Desert Woodrat (*Neotoma lepida*) were present at over 50% of the nests, and Mourning Doves (*Zenaida macroura*) were present at 48% of the nests (Boyce 1985).

Threats

Threats to the California population include loss or degradation of breeding and foraging habitat, direct human disturbance at nest sites, shooting, and collision with stationary objects (e.g., fences, electrical transmission lines, vehicles). Habitat loss and degradation in the form of conversion of shrub steppe, sagebrush, and chaparral habitats to agriculture may reduce numbers locally, especially in areas where ground squirrels are a primary diet item (Steenhof 1998).

Shooting has been, and probably continues to be, a regional problem (Boyce et al 1986, Steenhof 1998). Harvest for falconry has been suggested as a threat factor although probably not a population-level factor (Steenhof 1998). In California, between 1 and 19 birds are reported as collected for falconry primarily in Kern and San Bernardino counties (Unpubl. Dept. of Fish and Game data) with unreported harvest likely at least twice that number.

Egg shell thinning as a result of secondary pesticide ingestion has been documented in this species (Enderson and Berger 1970, Enderson and Wrege 1973) but the current effects of this problem are unknown. Given the persistence of DDE in the environment, and it's continued use in parts of the Prairie Falcon's range, productivity may still be affected by this threat factor.

Human disturbance has resulted in nest abandonment and inadvertent dislodging and destruction of eggs (Steenhof 1998). The effects of mining in the vicinity of Prairie Falcon aeries have been studied with conflicting results and conclusions (Holthuijzen et al 1990, Bednarz 1984). Boyce et al (1986) reported intense human recreational activity around nest sites in the Mojave desert and suggested this may be a population-level threat factor despite the fact that some sites are currently protected (LaPrie 1997). In this region, nests near roads were more likely to fail or suffer reduced productivity than sites away from roads (Boyce 1982).

Management and Research Recommendations

Steenhof (1998) recommends the following research priorities for the Prairie Falcon:

1) Studies to investigate local and regional movement patterns between breeding and non-breeding population segments.

2) Population size and status studies range wide
3) Studies measuring the effects of habitat loss, degradation, and alteration on productivity and prey availability.

Boyce et al (1986) suggested annual nest monitoring to determine productivity trends, affects of harvest and human disturbance, and use of alternate nest sites within breeding territories. Annual monitoring, even using a sampling design intended to minimize effort and cost, is probably not feasible in California, but could be incorporated as requirements into regional management plans. Determining current population size and status within areas supporting historically high numbers of breeding pairs should be a top priority.

Monitoring Needs

Boyce et al (1986) described an ideal monitoring scenario which would yield valuable data needed to properly manage Prairie Falcon populations in California. California participation in the North American Raptor Monitoring (NARMs) program would also help focus attention on the need for consistent and long-term population status information. While not well monitored by the BBS (Sauer et al. 2000), this species has been detected on sufficient CBC circles to provide trend information on winter populations.

Acknowledgments

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